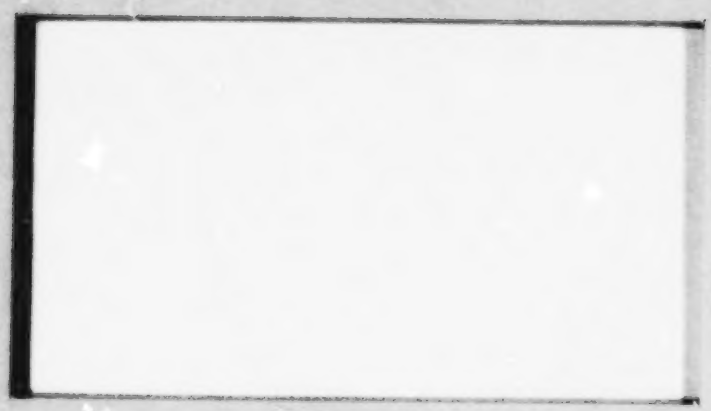

INNOVATION AND TECHNOLOGY DIVISION

ONTARIO MINISTRY OF INDUSTRY, TRADE AND TECHNOLOGY

Annual Report on the Technology Centre Program 1984/1985

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EXECUTIVE SUMMARY

I. Mandate

- The Technology Centres were established in order to promote and enhance the competitiveness of Ontario industry through the application of technology by:
    - improving the efficiency of the production process through the application of technology (e.g. CAD/CAM, Robotics, Statistical Process Control).
    - encouraging and aiding in the development of high technology products through advice, funding and R&D facilities (e.g. microelectronics, resource machinery venture capital funds).
- The Centres provide the following services to Ontario industry:
    - awareness
    - information
    - application assistance
    - demonstration
    - training
- There are seven Technology Centres located across the Province:
    - Ontario Centre for Microelectronics, Ottawa
    - Ontario Centre for Advanced Manufacturing
        - CAD/CAM, Cambridge
        - Robotics, Peterborough
        - Canada/Ontario Centre for Advanced Manufacturing , Windsor
    - Ontario Centre for Automotive Parts Technology - St. Catharines
    - Ontario Centre for Farm Machinery and Food Processing Technology, Chatham
    - Ontario Centre for Resource Machinery Technology - Sudbury

II Summary

- This is the second full year of operation for the original six Technology Centres. Each Centre has a self-sufficiency goal of covering a portion of its operating expenditures. The overall self-sufficiency level across the Centres has doubled over the last year.

- The Technology Centres have achieved recognition as being world-class and there are indications that other countries are emulating the approach, as the Centres have had numerous visitors from other countries.

- The number and value of contracts signed by the Centres has more than doubled over the last year.

- During this fiscal year 1984/85 the seventh Technology Centre was opened, the Canada/Ontario Centre for Advanced Manufacturing in Windsor, with a staff of six. The Centre's main function is to provide advice and assistance to industries in the Windsor area and to develop particular experience and expertise with respect to advanced manufacturing applications in the tool, die, mold building industries and the automotive parts industry. The Centre will also maintain liaison with organizations (particularly the automotive industry) in Michigan concerning developments in advanced manufacturing technology in the U.S. This is a unique Centre in that it is jointly funded by the federal and provincial governments.

- During the past year the Centres have continued to promote awareness of new technologies through seminars/workshops held throughout the province, attending trade shows and speaking engagements. Over the past two years, the Technology Centres have presented 300 seminars to 8,300 participants.

- The Farm Machinery and Food Processing Technology Centre's pilot plant and laboratory were completed in February, 1985. This will allow the Centre to prototype and evaluate different processing and packaging methods for their clients.

- The number of staff currently at the Centres is 185.

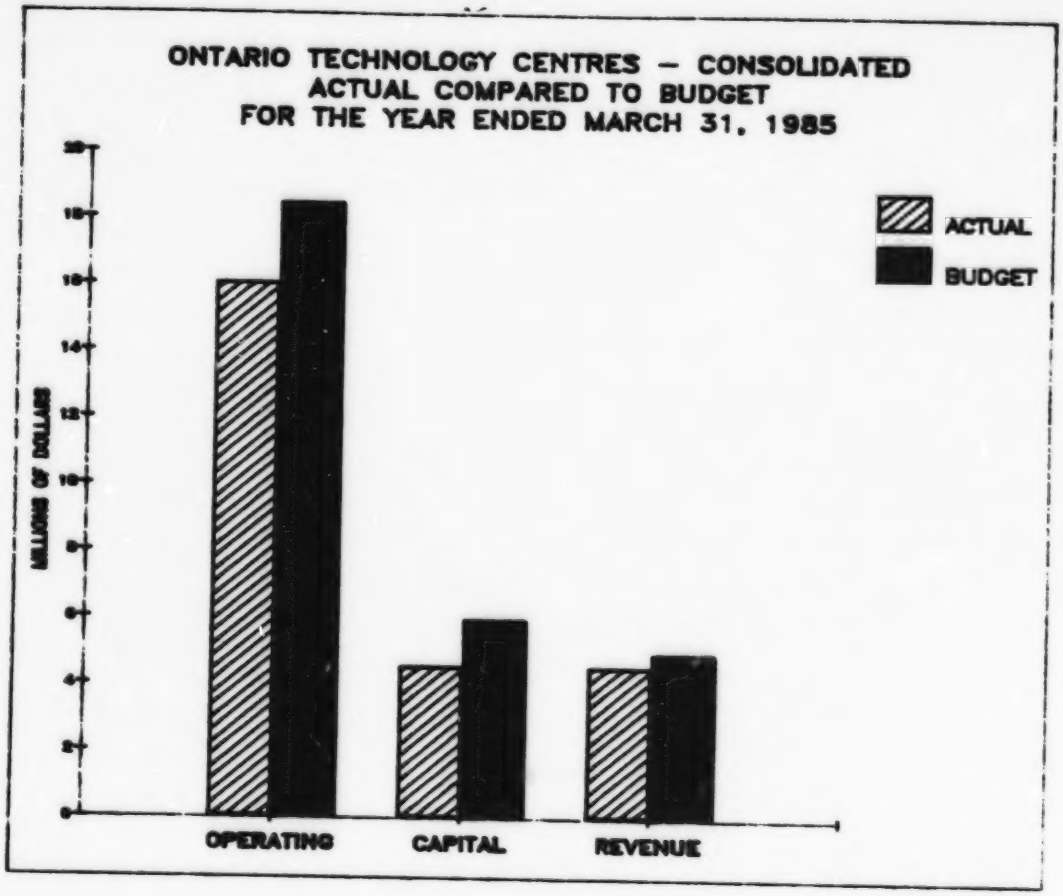
- The Boards of Directors for the Centres have formed sub-committees on Strategic Planning in order to facilitate the annual updating of the Centres' Business Plans.

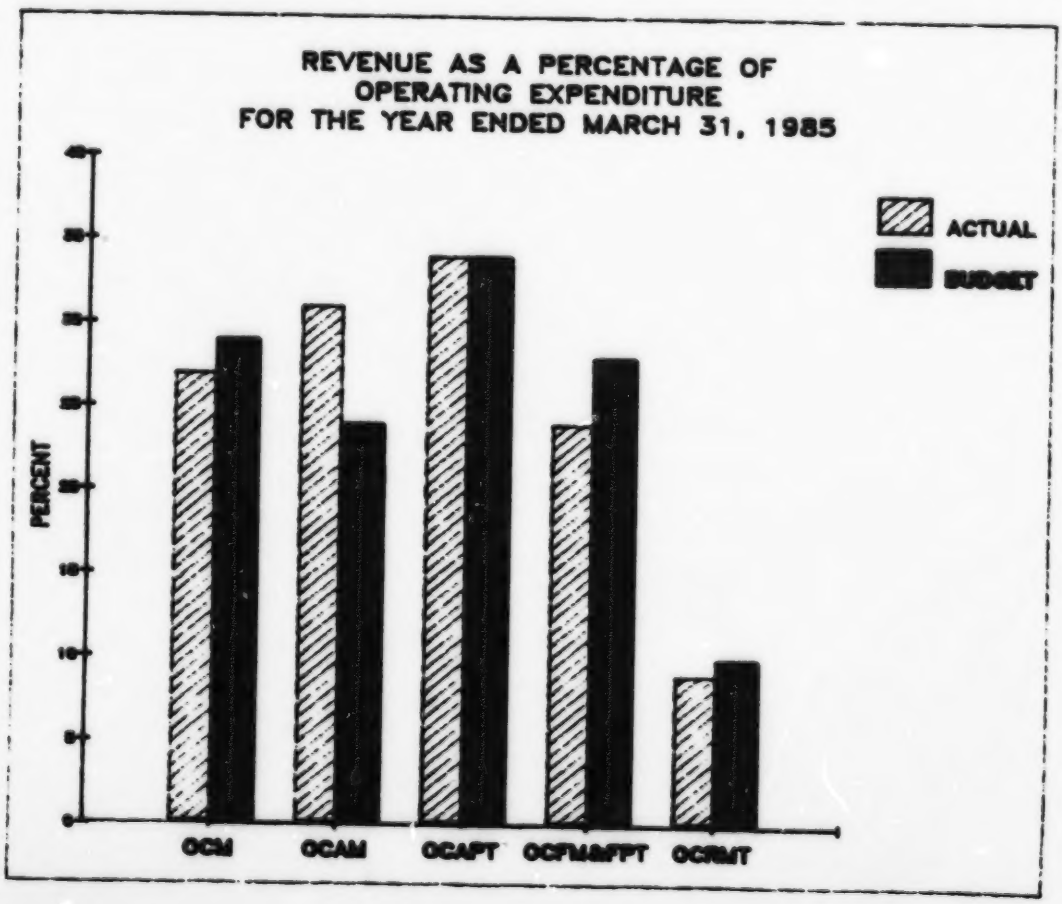
III. Financial

Executive Summary
Consolidated Comparative Operating Statement
For the Year Ended March 31, 1985
($000's)

	1984/1985	1983/1984
Operating Expenses	$ 16,177	$ 11,048
Capital Expenses	4,579	6,416
Investment Fund	465	1,311
Total Expenses	21,221	18,775
Revenue	4,641	1,269
Contribution from the Province *	$ 16,580	$17,506
Self-Sufficiency (Revenue as a percentage of operating)	29%	11%

* Interest income is included in the contribution from the Province: 1984/1985 $358,093
1983/1984 $250,473


ONTARIO TECHNOLOGY CENTRES – CONSOLIDATED
ACTUAL COMPARED TO BUDGET
FOR THE YEAR ENDED MARCH 31, 1985
ACTUAL
BUDGET
MILLIONS OF DOLLARS
OPERATING
CAPITAL
REVENUE


REVENUE AS A PERCENTAGE OF
OPERATING EXPENDITURE
FOR THE YEAR ENDED MARCH 31, 1985
ACTUAL
BUDGET
PERCENT
OCM
OCAM
OCAPT
OCFM&FPT
OCRMT

IV. Source of Revenue

	1984/1985		1983/1984	
	Amount	% of Total	Amount	% of Total
Contract	$3,979,777	83.0%	$ 808,638	63.7%
Investment	51,214	1.1	14,000	1.1
Seminar/Workshops	767,177	15.9	447,808	35.2
TOTAL	$4,798,168*	100%	$1,270,446	100%

* Includes inter-centre transactions of $156,656.

V. Contracts

(a) Number and Value

Size of Company[1]	1984/1985 Number	1984/1985 Value	1983/1984 Number	1983/1984 Value
Government[2]	8	$ 161,348	5	$ 139,000
Small Company	223	2,672,471	53	638,407
Medium Company	132	2,255,261	39	395,672
Large Company	166	2,386,362	75	1,204,555
TOTAL[3]	529	$ 7,475,442	172	$2,377,634

1. Size of Company
   small = 0-99 employees
   medium = 100-499 employees
   large = 500 +
2. Refers to Farm Machinery and Food Processing Technology Centre.
3. Excludes Resource Machinery Technology.

(b) Investments

Resource Machinery Technology

Size of Company	1982-1985 Number	1982-1985 Value
Small	12	$1,800,000
	12	$1,800,000

VI. Awareness Activities

	1984/1985 #	1983/1985 #
Seminars/Workshop	199	109
Attendees	4,658	3,710
Media Coverage	741	563
Tours	244	257
Attendees	3,899	4,030
Trade Shows	47	29
Newsletters	24	24
Distribution	40,748	35,900
Client Consultations on Investment (OCRMT)	1,200	900
On-site Investments Analysis (OCRMT)	160	127

ONTARIO CENTRE FOR MICROELECTRONICS - (OCM)

I. Mandate

- To facilitate the adoption of microelectronics by Ontario industry to improve their competitiveness and thereby contribute to an increase in manufactured end products in Ontario.

  To accelerate the understanding of microelectronics technology and its potential application among small and medium-sized firms.

II. Summary

- OCM continues to strengthen and adapt its services and programs to help meet Ontario's needs in the field of microelectronics technology.

- OCM's extensive experience has saved smaller companies the expense of developing in-house staff capable of specifying integrated circuits with chip manufacturers. Most small companies could not have adapted these new technologies as their lack of technical competence combined with relatively low volume requirements make them unattractive customers for major silicon manufacturers. OCM has also negotiated consolidated purchasing agreements with silicon manufacturers and passes these savings to clients.

- During the last year the Centre has developed a state of the art facility. Computer Aided Design and development tools now include:

  - VAX 11/780 host computer
  - TEGAS family of logic simulation software
  - MEDS gate array and standard cell layout and routing system
  - Hewlett Packard data generation and data analysis equipment
  - Microprocessor development systems
  - VALID Scald I workstations
  - Wafer prober
  - Technology databases - GTE (Gate Arrays), NCR (Standard Cell)
  - General lab test equipment

- OCM now offers a unique service giving company engineers an opportunity to convert their circuit designs to a customized chip. Under the service a company sends an engineer to OCM. Using the Centre's experienced staff engineers and sophisticated CAD tools, the visiting engineer works through all the steps in converting their circuit designs to a gate array or standard cell integrated circuit. Based

on this experience and training, the engineers will be better able to undertake chip designs within their own company.

- The Centre's efforts to build a "silicon market" that will eventually be served by the large merchant chip vendors has been followed-up by regional design centres being established in the province by Texas Instruments, Motorola, and most recently LSI Logic. In most cases these chip manufacturers are not interested in designing devices for the small, technically unsophisticated customers being served by the Centre.

- OCM took the initiative at the beginning of 1984/85 to bring together representatives of the other Canadian Microelectronics Centres to ensure a coordinated approach to the diffusion of microelectronics technology. Meetings continue on a semi-annual basis. OCM has undertaken a joint chip design contract with the University of Toronto's Microelectronics Development Centre; and has exchanged training seminars with the CADMI Microelectronics Centre located in Fredericton, New Brunswick.

- OCM actively supports other Canadian microelectronics initiatives such as the Canadian Microelectronics Corporation Phase I (university VLSI design program and training), the Canadian Semiconductor Design Association, and the Ottawa Carleton Research Institute.

- Because of the success of the Centre's Microprocessor Software Project Management seminar, a textbook on the same subject is being published by the Centre and Marcel Dekker of New York.

- The Microelectronics Centre participated in 5 new Ontario company start-ups during the year.

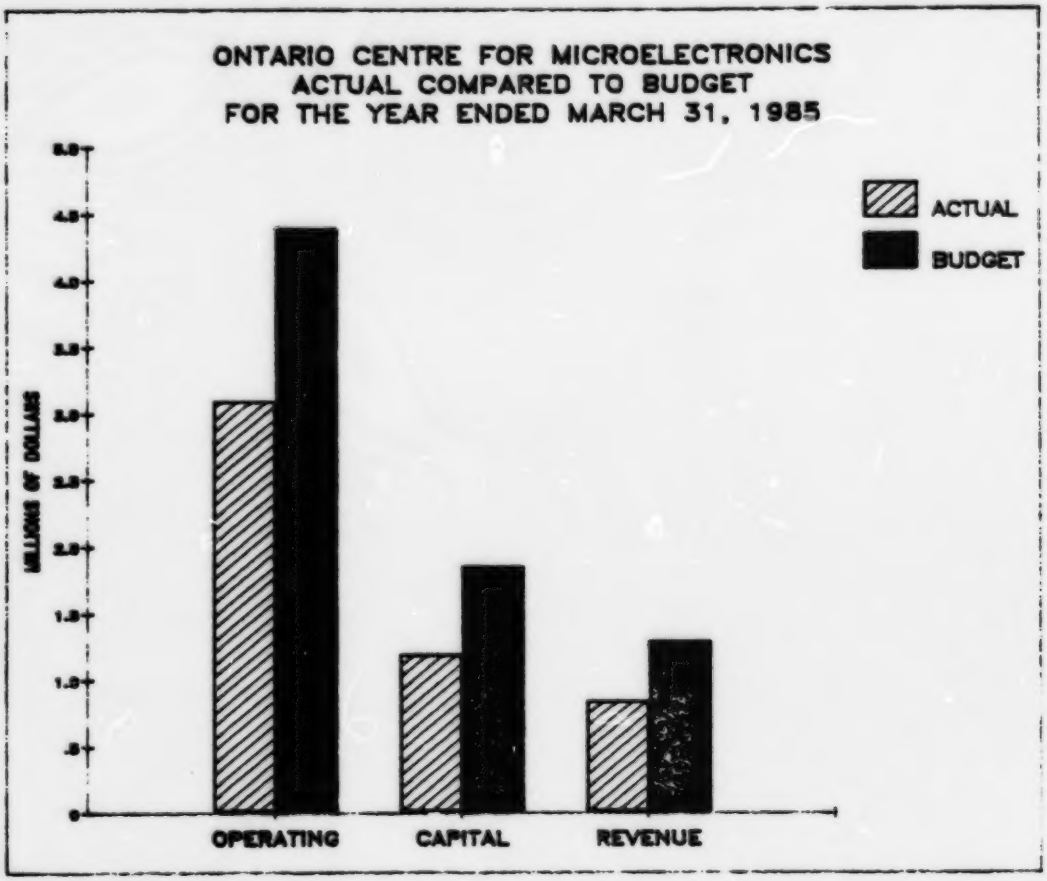
III. Financial

Ontario Centre for Microelectronics
Comparative Operating Statements
For the Year Ended March 31, 1985

($000's)

	1984/1985	1983/1984
Operating Expenses	$ 3,119	$ 2,672
Capital Expenses	1,190	734
Total Expenses	4,309	3,406
Revenue	841	268
Contribution from Province of Ontario*	$ 3,468	$ 3,138
Self-Sufficiency (Revenue as a percentage of Operating)	27%	10%

* Interest income is included in the contribution from the Province:
1984/1985 $71,000
1983/1984 $50,000



IV. Source of Revenue

	1984/1985	1983/1984
Contract Revenue	$693,000	$154,000
Seminar/Workshops	148,000	114,000
	$ 841,000	$ 268,000

V. Contracts

(a) Number and Value

Size of Company	1984/1985 Number	1984/1985 Value	1983/1984 Number	1983/1984 Value
Small	47	$ 860,520	9	$170,087
Medium	2	198,581	3	61,000
Large	7	264,775	5	39,123
	56	$1, 323,876	17	$ 270,210

(b) Industry Affiliation

	1984/1985	1983/1984
Electronic	21	10
Computers	3	2
Electrical Engineering	3	2
Mechanical	5	Ø
Publishing	1	Ø
Rubber Manufacturer	Ø	1
Food Processor	Ø	1
Education	Ø	1
Total*	33	17

* There have been several contracts with one company.

(c) Type of Contracts

	1984/1985 Number	1984/1985 Value	1983/1984 Number	1983/1984 Value
Feasibility Studies	34	$ 218,014	12	$ 99,583
Chip Designs	14	328,760	2	88,600
Product Development	8	777,102	3	82,027
Total	56	$1,323,876	17	$270,210

VI. Awareness Activities

	1984/1985 #	1983/1984 #
Seminars	53	60
Attendees	1,355	933
Media Coverage	138	88
Tours	61	22
Attendees	423	166
Trade Shows	11	3
Newsletter	4	6
Clients Receiving	23,248	22,500

VII. Case Studies

(a) ADVANCED CIRCUIT SYSTEMS LTD.

KANATA, ONTARIO

Problem:
- Required a low-cost logic analyzer.
- The cost of the equipment had to be less than the current price of $8,000 - $25,000.

Background:
- The equipment had to be suitable for the casual user.
- Centre developed the hardware design and the basic operating system. Advanced Circuit System Ltd. developed the industrial design and the user software.

Result:
- Lanser 40 developed, used to design, test and troubleshoot digital logic under operating conditions.

(b) AUTOMATIC PASSENGER COUNTINGS SYSTEMS LTD.

LONDON, ONTARIO

Problem:
- Transit authorities are under pressure to control costs and serve a growing demand for public transportation.

Background:
- Cost effective method required to measure the dynamics of passenger usage.

  The Microelectronics Centre assisted APC Systems Ltd. in developing a microelectronic transit vehicle monitoring system.

Result:
- The monitoring system developed is capable of giving transit officials an accurate realtime picture of the system to ensure better match-up of buses and riders especially during peak traffic periods.

  Operating tests planned in the near future in a large metropolitan transit system.

ONTARIO CENTRE FOR ADVANCED MANUFACTURING -(OCAM)

I. Mandate

- To improve the productivity and competitiveness of Ontario industry and commerce by:
- Accelerating the utilization of CAD/CAM, Robotics, and Flexible Manufacturing through programs promoting awareness and applications;
- Encouraging the growth of supportive CAD/CAM and Robotics industries in Ontario.

II. Summary

- The Ontario Centre for Advanced Manufacturing consists of three centres:

  CAD/CAM, Cambridge
  Robotics, Peterborough
  Canada/Ontario Advanced Manufacturing Centre, Windsor,

- The Canada/Ontario Centre for Advanced Manufacturing was opened in November 1984. The Centre is jointly funded by the Federal Government and the Provincial Government. The Centre serves the advanced manufacturing technology needs of industry in the Windsor area, as well as maintaining liaison with organizations (particularly the automotive industry) in Michigan concerning developments in advanced manufacturing technology in the U.S.
- During the past year the Centres have continued to promote awareness of new technologies through the media, with associations and consultants, through tours of its facilities, by participating in numerous trade shows, speaking engagements and by seminars and workshops.
- The Centres are continuing to pursue joint ventures and other opportunities to involve private sector consultants to achieve greater application of new technology in Ontario.
- A very effective approach for creating increased awareness of the Advanced Manufacturing Centres are "Tech Talks". These are clinics held in various communities across the province in which manufacturing companies express their particular problems and concerns on a one to one basis with a consultant from the Centres.

- The Ontario Robotics Centre has negotiated an agreement with Echlin Canada to install a flexible robotic assembly work cell in Echlin's plant facility. The plant will be used by the Centre as a demonstration to other manufacturers. The plant will have a direct effect on the employment and productivity of Echlin. Approximately 60 jobs will be added and production volume will increase from 360,000 units to 1,200,000 units per year.

- Research Studies

Canadian Robotic and Development Survey

The Ontario Robotics Centre completed a joint survey with the University of Toronto on Canadian research and development facilities in robotics and related technologies. The Ontario Robotics Centre surveyed the private sector, while the University of Toronto surveyed the institutions. This survey was completed for the National Research Council, which is publishing the results.

Development and Information Centre Survey

The Ontario Centre for Advanced Manufacturing completed an in-depth survey of North American development information centres. The surveys included all centres that provide technical information to private sector businesses. This survey was completed for the National Research Council, which is publishing the results.

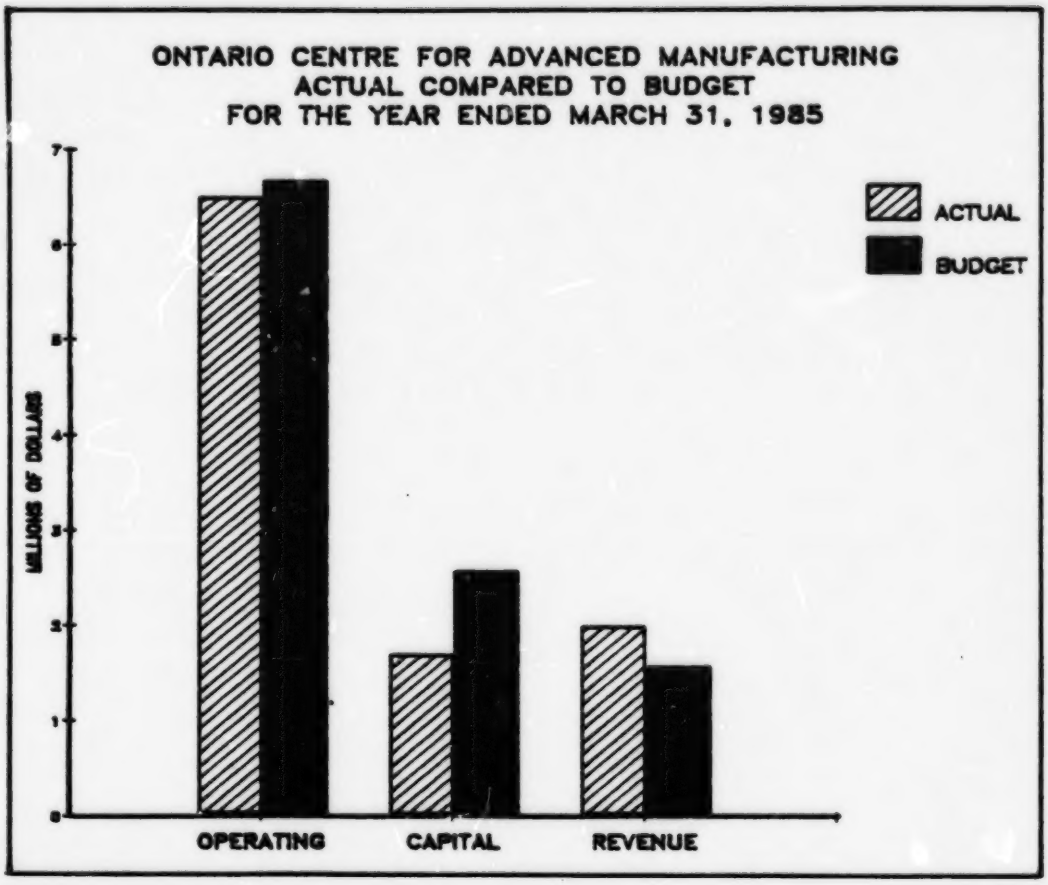
III. Financial

Ontario Centre for Advanced Manufacturing
Comparative Operating Statement
For the Year Ended March 31, 1985
($000's)

	1984/1985	1983/1984
Operating Expenses	$6,493	$4,477
Capital Expenses	1,730	5,097
Total Expenses	$8,223	$9,574
Revenue	2,026	498
Contribution from the Province	$6,197	$9,076
Self-Sufficiency (Revenue as a percentage of operating	31%	11%

* Interest income is included in the contribution from the province:

1984/1985 $138,211
1983/1984 $108,324



IV. Source of Revenue

	1984/1985	1983/1984
Contracts	$ 1,669,218	$ 309,914
Seminar	357,166	188,836
	$ 2,026,384	$ 498,750

Ontario Centre for Advanced Manufacturing - CAD/CAM

V. Contracts

(a) Number and Value

Size of Company	1984/1985 Number	1984/1985 Value	1983/1984 Number	1983/1984 Value
Small	39	$ 232,000	9	$ 30,432
Medium	49	263,000	12	62,287
Large	65	601,000	33	167,569
TOTAL	153	$1,096,000	54	$ 260,288

(b) Industry Affiliation

	1984/1985	1983/1984
Automotive	22	4
Chemical	3	ø
Computers & Electronics	16	7
Education	12	5
Electrical	11	5
Forestry	4	ø
Government	10	2
Metals	8	4
Transportation	5	1
Mechanical	22	4
Consultant	10	1
Heavy Equipment	12	2
Miscellaneous	18	19
	153	54

(c) Type of Contract

	1984/1985 Number	1984/1985 Value	1983/1984 Number	1983/1984 Value
Feasibility Studies	50	$ 303,000	27	$ 150,719
Evaluation of Vendors	18	161,000	11	24,071
Applications Assistance	73	504,000	ø	ø
Information Retrieval	2	97,000	ø	ø
Other	10	31,000	16	85,498
TOTAL	153	$1,096,000	54	$ 260,288

Ontario Centre for Advanced Manufacturing - Robotics

V. Contracts

(a) Number and Value

Size of Company	1984/1985 Number	1984/1985 Value	1983/1984 Number	1983/1984 Value
Small	23	$ 213,000	11	$ 50,895
Medium	26	636,000	10	45,563
Large	21	261,000	10	53,753
TOTAL	70	$1,110,000	31	$ 150,211

(b) Industry Affiliation

	1984/1985	1983/1984
Automotive	14	7
Chemical	9	Ø
Computers & Electronics	2	Ø
Education	6	1
Electrical	5	1
Food & Beverage	6	1
Forestry	7	Ø
Government	4	3
Metals	8	Ø
Miscellaneous	9	18
Total	70	31

(c) Type of Contract

	1984/1985 Number	1984/1985 Value	1983/1984 Number	1983/1984 Value
Operating Engineering	2	$ 5,000	Ø	$ Ø
Feasibility Engineering	10	83,000	Ø	Ø
Conceptual Engineering	41	391,000	25	133,343
Engineering Agency	3	18,000	Ø	Ø
Applications Assistance	8	48,000	Ø	Ø
Demonstration Projects	1	451,000	1	2,415
Information Retrieval	3	113,000	3	920
Other	2	1,000	2	13,533
TOTAL	70	$1,110,000	31	$150,211

ONTARIO CENTRE FOR ADVANCED MANUFACTURING

VI. Awareness Activities

	CAD/CAM		Robotics	
	1984/1985	1983/1984	1985/1984	1983/1984
	#	#	#	#
Seminars/Workshops	46	30	26	11
Attendees	1,049	1,152	583	272
Media Coverage	264	87	201	80
Tours	72	145	71	68
Attendees	1,674	2,151	1,565	1,556
Trade Shows Entered	12	7	5	4

* Activities of the Windsor Centre not included.

VII. Case Studies

CAD/CAM

(a) ASCOLECTRIC

BRANTFORD, ONTARIO

Problem: . Required cost effective method to increase accuracy of electrical schematic drawings.

Background: . Ascolectric is a manufacturer of solenoid valves and automatic transfer switches for electrical power.

The CAD/CAM Centre assisted the company in selecting and installing a two-dimensional CAD System built around a personal computer.

Result: . The System cost $15,000, and it has improved the accuracy of electrical schematic drawings, cut drafting time and increased volume 5 times above the previous level.

(b) LAMKO TOOL & MOLD

LONDON, ONTARIO

Problem: . Lamko wanted to automate their facility to improve product quality and customer service.

Background: . The CAD/CAM Centre conducted an in-depth evaluation of different CAD/CAM systems, and recommended the appropriate systems to Lamko.

Result: . Lamko implemented a completely integrated CAD/CAM tool making system. The system enables customers to send precise geometric specifications of a part on magnetic tape to Lamko.

. Lamko is expanding to international markets.

VII. Case Studies

Robotics

(a) ECHLIN CANADA

TORONTO, ONTARIO

Problem: . Increase productivity in automotive parts assembly program.

Background: . Centre looking for a demonstration project.

Echlin could not undertake productivity project on its own.

To develop robotics assembly work cell.

Centre negotiated agreement with Echlin to build plant in their facility.

Result : . Producing the product at lower cost than U.S. plants.

U.S. Plants line operation to be shutdown and volume to be added to Canadian plant.

1.7 million dollars of additional equipment being purchased to manufacture the components for brake adjusters.

Volume to increase from approximately 360,000 units to 1,200,000 units per year with majority of increase being exported to U.S.

Approximately sixty jobs to be added to Echlin Canada's facilities.

In process of hiring in-house technical assistance through OCAPT Program.

(b) GALTACO INC.
CTR & D DIVISION
PARIS, ONTARIO

Problem: . Increase productivity, quality and consistency.

Background . Plant manufactures ductile iron castings used in automotive brake system.

The company installed two robots in a double work cell after studies were completed by the Ontario Robotics Centre.

Result : . Robots will improve productivity, quality and consistency of the product, and they will make the operation more flexible. The robots will save time and money when retooling because they are run by a reprogrammable computer.

ONTARIO CENTRE FOR AUTOMOTIVE PARTS TECHNOLOGY - (OCAPT)

I. Mandate

- To be an initiator, innovator and integrator in the dissemination of technology and managerial methods to enhance the competitiveness of the automotive parts producers in Ontario. The Centre helps Ontario-based automotive parts manufacturers:

  - improve productivity and quality
  - develop and apply new product and process technology
  - identify and capitalize on new opportunities world-wide.

II. Summary

- The Centre has completed overview survey studies on the subjects of coatings, plastics, rubber, electronics, metals, metal matrix and ceramics, which are available to industry.

- The Centre has undertaken a project on behalf of the Ministry of Energy to identify the potential of Ontario manufacture of transportation alternate fuel system components, for example, electric vehicles.

- The Centre tries to involve and lever private sector expertise and resources where possible by training consultants sub-contracting project work, and co-sponsoring projects and seminars.

- During the past two years, the Centre has presented 100 public seminars providing training to 2,700 participants appealing mainly to middle management personnel in industry. Additional training has also been provided through Automotive Parts Centre's manufacturing services consulting program to 3,334 participants in 86 companies through to the end of March 1985. The training elements of these programs have centered predominantly around Statistical Process Control, Quick-Die-Change and Just-in-Time Production. Training through the consulting programs use formalized classroom approaches.

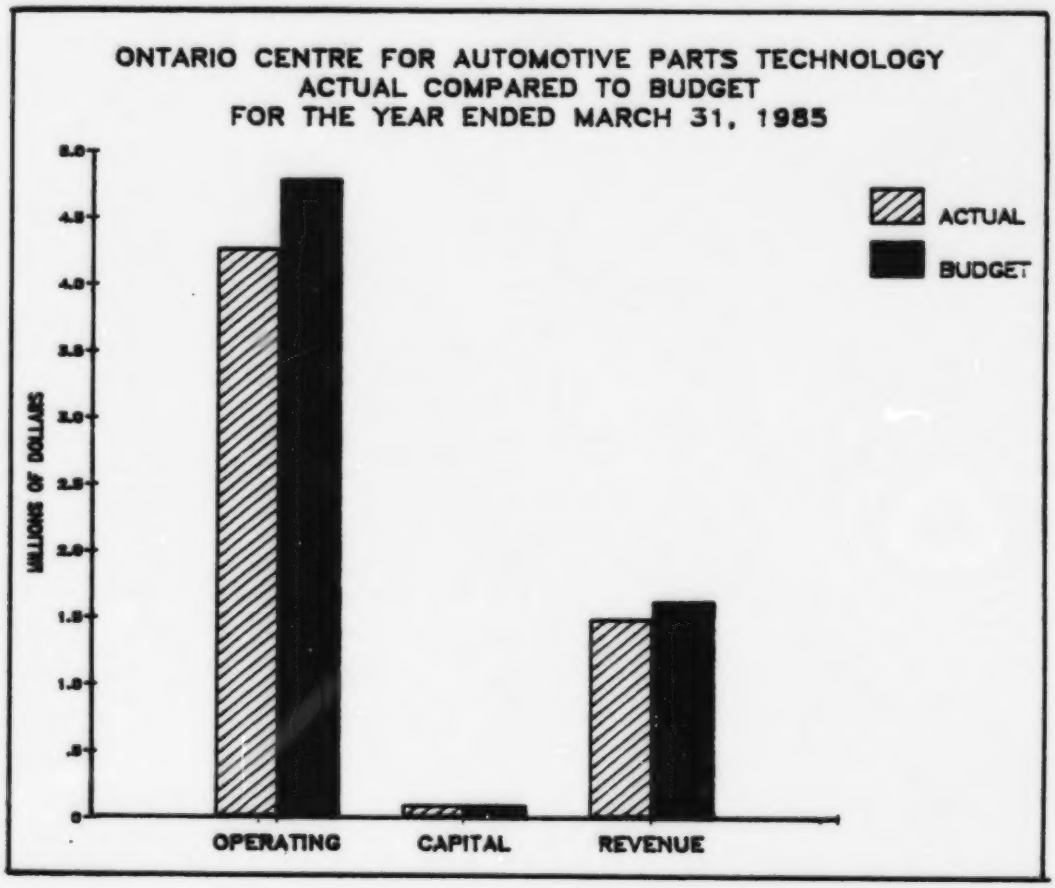
III. Financial

Ontario Centre for Automotive Parts Technology
Comparative Operating Statement
For the Year Ended March 31, 1985
($000's)

	1984/1985	1983/1984
Operating Expenses	$4,273	$2,282
Capital Expenses	108	79
Total Expenses	$4,381	$2,361
Revenue	1,468	432
Contribution from the Province *	$2,913	$1,929
Self-Sufficiency (Revenue as a percentage of operating)	34%	19%

* Interest income is included in the contribution from the province:

1984/1985	$52,418
1983/1984	$21,495



IV. Source of Revenue

	1984/1985	1983/1984
Manufacturing Contracts	$ 563,638	$ 83,376
Seminars	252,960	124,834
TOTAL	816,598	208,210
Technology Contracts	589,161	205,995
Seminars	1,400	443
TOTAL	590,561	206,438
Marketing Contracts	51,120	Ø
Seminars	4,443	17,445
Studies	5,150	Ø
TOTAL	60,713	17,445
TOTAL REVENUE	$1,467,872	$ 432,093

V. Contracts

(a) Number and Value

Size of Company	1984/1985 Number	1984/1985 Value	1983/1984 Number	1983/1984 Value
Small	73	$1,109,211	21	$ 379,093
Medium	46	1,112,510	11	183,726
Large	67	1,227,022	25	928,910
TOTAL	186	$3,448,743	57	$1,491,729

(b) Industry Affiliation

	1984/1985	1983/1985
Metal (Stamping, forming, fabrication, forging, casting)	115	28
Plastic/Rubber	36	11
Electrical, Electronic, Electromechanical	12	4
Fabrics	5	5
Tool and Die	4	-
Glass	1	-
Paints, Coatings and Plating	3	-
Chemicals	5	-
Other	5	9
TOTAL	186	57

(c) Type of Contract

	1984/1985 Number	1984/1985 Value	1983/1984 Number	1983/1984 Value
Feasibility Studies	24	$ 395,351	10	$ 383,044
Technology Development	21	960,930	Ø	Ø
Technology Advice & Consulting	6	107,992	28	178,429
Personnel Support Funding	8	612,244	Ø	Ø
Technology Transfer	1	10,500	Ø	Ø
Marketing	2	63,600	Ø	Ø
Electric Vehicle	2	88,000	Ø	Ø
Manufacturing Consulting	122	1,210,126	19	930,266
TOTAL	186	$3,448,743	57	$1,491,739

VI. Awareness Activities

	1984/1985 #	1983/1984 #
Seminars/Workshop	65	35
Attendees	1,461	1,233
Media Coverage	61	174
Tours	40	10
Attendees	237	107
Trade Shows Entered	14	5
Newsletters	12	12
Distribution	4,800	4,200

VII. Case Studies

(a) BLACKSTONE INDUSTRIAL PRODUCTS LIMITED

STRATFORD, ONTARIO

Problem: . Reduce die change time

Background: . Just-in-Time Production is an important company objective.

Centre assisted Blackstone in developing a time saving technique.

Result: . 90% reduction of die change time from 1 hour and 57 minutes to 11 minutes.

(b) JET MOULDING

AJAX, ONTARIO

Problem: . Increase company's ability to quote highly competitive contracts.

Background: . Auto Parts and Ontario Robotics Centres jointly determined the problem areas in the automation process.

. Through the Technology Development Funding Program, financing was provided for innovative product and process. Technical Personnel Support Fund provided funding to hire an engineer.

. The development of new equipment to provide the capacity of new products, new manufacturing technology and improved quality control.

Result: 30% reduction in manufacturing costs, an increase of 14 new jobs.

ONTARIO CENTRE FOR FARM MACHINERY & FOOD PROCESSING TECHNOLOGY - OCFM&FPT

I. Mandate

- Through the increased use of technology in farm machinery and food processing industries to promote increased productivity and to develop new products. The Ontario Centre for Farm Machinery & Food Processing Technology provides the following services to their clients:

  - engineering and development of new equipment and food products
  - modification of equipment and processes
  - manufacturing methods layout and productivity improvements
  - food preservation, packaging, and quality control
  - information, analysis and outreach

II. Summary

- The pilot plant and laboratory were completed in February of 1985. This will allow the Centre to prototype and evaluate different processing and packaging methods for their clients.

- The Centre has undertaken two special projects during this fiscal year. The Centre is studying grain drying equipment and related projects in biomass conversion and energy analysis. The Centre is also participating with the Ontario Ministry of Agriculture and Food and the Ministry of Energy in the development of a hay compactor.

- The Centre's Technical Information Service offers a unique resource for agribusiness industries. Through an extensive computer based search and retrieval system, and consultation with professionals in Engineering and Food Processing, manufacturers, processors and equipment users are provided with wide-ranging and current information about:

  - Existing machinery and processes

  - Research findings and information

  - Current technology and test results

III. Financial

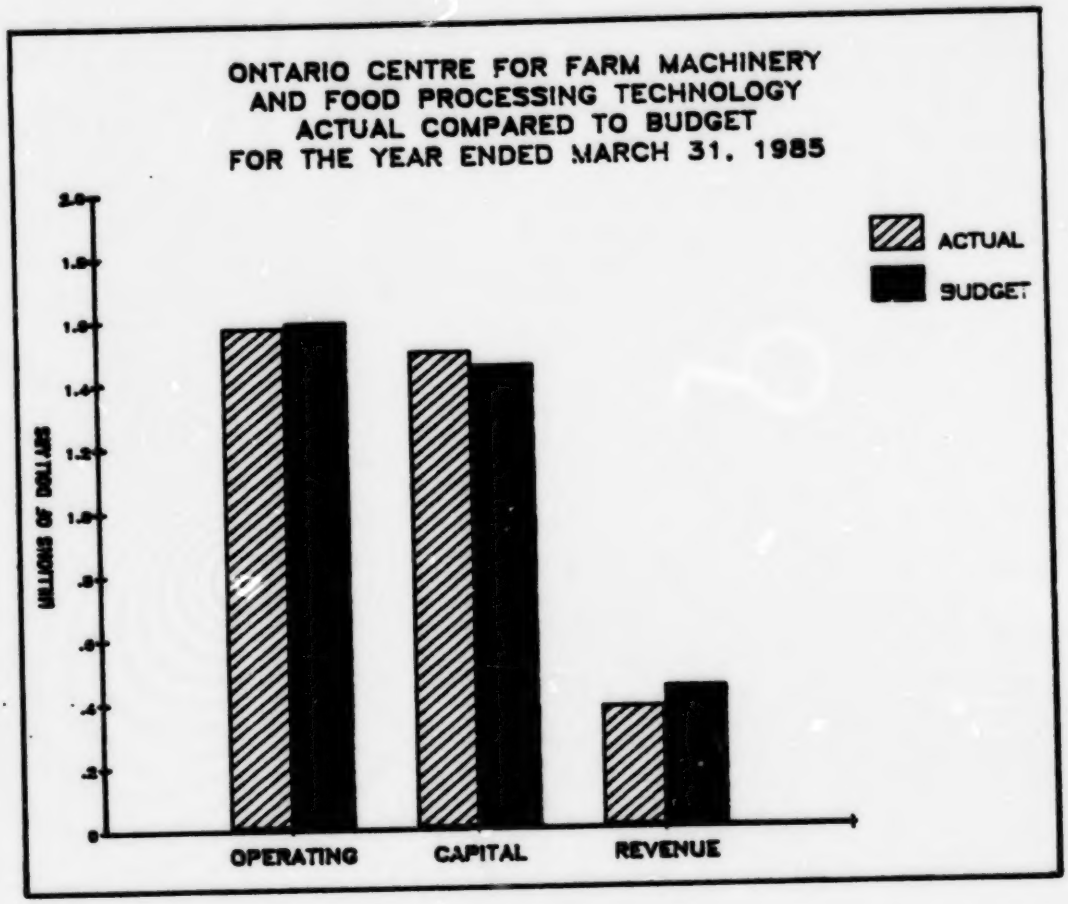
Ontario Centre for Farm Machinery & Food Processing Technology
Comparative Operating Statement
For the Year Ended March 31, 1985

($000's)

	1984/1985	1983/1984
Operating Expenses	$ 1,582	$ 753
Capital Expenses	1,542	404
Total Expenses	$ 3,124	1,157
Revenue	383	53
Contribution from Province of Ontario*	$ 2,741	$ 1,104
Self-Sufficiency (Revenue as a % of operating)	24%	7%

* Interest income is included in the contribution from the province:

1984/1985 $44,645
1983/1984 $16,654



IV. Source of Revenue

	1984/1985	1983/1984
Contracts	$ 383,390	$ 53,353
	$ 383,390	$ 53,353

V. Contracts

(a) Number and Value*

Size of Company	1984/1985 Number	1984/1985 Value	1983/1984 Number	1983/1984 Value
Small	41	$ 257,740	3	$ 7,900
Medium	9	45,170	3	43,096
Large	6	32,565	2	15,200
	56	$ 335,475	8	$ 66,196

*Commercial contracts

(b) Industry and Government Affiliation

	1984/1985 Number	1984/1985 Value	1983/1984 Number	1983/1984 Value
Federal Government	3	$ 76,848	3	$ 102,000
Provincial Government	5	84,500	2	37,000
Commercial	56	335,475	8	66,196
	64	$ 496,823	13	$ 205,196

(c) Type of Contracts

	1984/1985 Number	1984/1985 Value	1983/1984 Number	1983/1984 Value
Product/Process Development	20	$ 148,004	3	$ 14,500
Product/Process Improvement	17	133,810	5	99,096
Evaluation & Analysis	11	22,204	3	4,600
Studies & Investigations	14	149,305	2	87,000
Energy Related	2	43,500	Ø	Ø
	64	$ 496,823	13	$ 205,196

VI. Awareness Activities

	1984/1985 #	1983/1984 #
Seminars/Workshop	N/A	N/A
Attendees		
Media Coverage	31	33
Tours	0	10
Attendees		30
Trade Shows	0	5
Newsletter	4	1
Distribution	1,900	1,200

VII. Case Studies

(a) PROCESSING TECHNOLOGY

KING CANNING INC.
PAIN COURT (NEAR CHATHAM)

Problem:
- Exterior corrosion on canned product causes buyer resistance which could lead to business failure.

Background:
- Two other consultants had tried to resolve unsuccessfully.
- After four-day run, problem identified by Centre.

Result:
- PH imbalance in well water was causing problem.
- Adding two phosphate salts to cooking water resolved the problem.
- Cost only $3,000 per season.

(b) LEAVER MUSHROOM LTD.
CAMPBELLVILLE, ONTARIO

Problem:
- Serious accident problem in harvesting mushrooms.
- Needed a low cost manoeuverable, platform not tied to a power source.

Background:
- Leaver is one of Canada's largest growers and processors of mushrooms.
- Employs over 400 people.
- Mushrooms grown on trays stacked 6 feet high and pickers climb trays to harvest mushrooms.

Result:
- Centre developed a "lifter" elevator platform working on a compressed air device.
- Minimal cost of $2,000-$2,500 per unit, less accidents, and increased yields.

ONTARIO CENTRE FOR RESOURCE MACHINERY TECHNOLOGY - OCRMT

I. Mandate

- Encourage the start-up and development of world class resource machinery companies in Ontario by the application of current technology to their products. In general, these developments will make the Ontario industry more productive and competitive and lead to increased employment.

II. Summary

- The Centre provides venture and pre-venture capital for use in resource industries. This may include a broad range of projects, for example, construction of prototypes of machines in which research and development have already been completed.

- The Student R & D Program was developed to encourage research among students and faculty of Universities and Colleges with the advice of industry sponsors. The objective of the program is to stimulate the development of innovative machinery/equipment concepts within forestry and mining industries in Ontario.

- The Centre to date has approved investments of over $2 million in 13 projects. These include 8 venture capital investments and 5 research and development projects.

- The majority of the projects have been in Northern Ontario and have proven to be successful both in job creation and export potential.

- An analysis completed by the Association of Venture Capital Companies (AVCC) indicates that the average venture capital industry's investment is $756,000, while OCRMT's average is $226,000 per project. The typical venture capital company generally invests in the later stages of a company's development while the OCRMT's participation is heavily in the pre-start-up, start-up and development stages of a firm. The private venture capital firms approve approximately 3% of the proposals they receive. To date, the Centre has approved 7.6% of the proposals received.

III. Financial

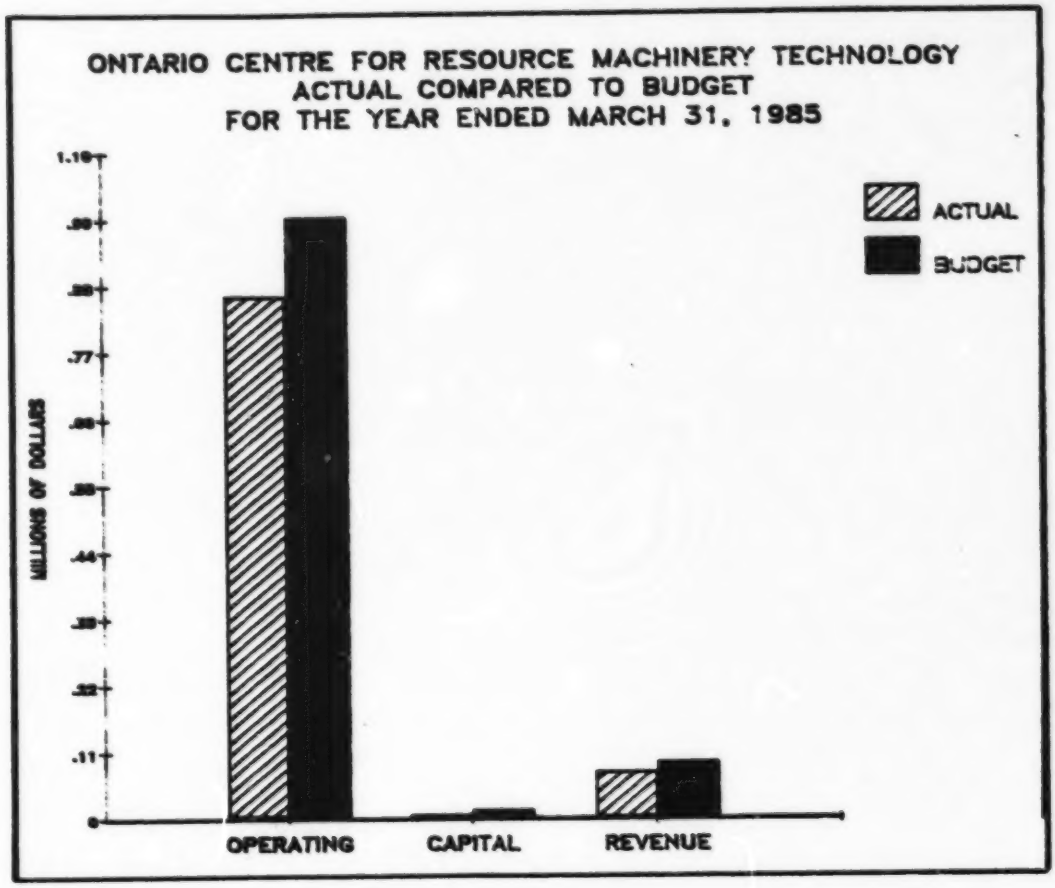
Ontario Centre for Resource Machinery Technology
Comparative Operating Statement
For the Year Ended March 31, 1985

($000's)

	1984/1985	1983/1984
Operating Expenses	$ 866	$ 864
Capital Expenses	9	102
Investment Fund	465	1,311
Total Expenses	1,340	2,277
Revenue	79	18
Contribution from Province of Ontario	$ 1,261	$ 2,259
Self-Sufficiency (Revenue as a percentage of Operating)	9%	2%

* Interest income is included in the Contribution from the Province of Ontario:

1984/1985 $51,819
1983/1984 $54,000



IV. Source of Revenue

	1984/1985	1983/1984
Seminars	$ 3,208	$ 2,250
Contracts	25,100	2,000
Investment Income	51,214	14,000
	$ 79,522	$18,250

V. Investments*

(a) Number and Value

Size of Company	March 31, 1985 Number	March 31, 1985 Value	March 31, 1984 1983/1984 Number	March 31, 1984 1983/1984 Value
Small	12	$ 1,800,000	7	$1,587,000
Total	12	$ 1,800,000	7	$1,587,000

(b) Industry Affiliation

	Cumulative Total of Projects from 1982 to 1985
Mining	3
Forestry	3
Mining & Forestry	7
	13

(c) Type of Investments

	March 31, 1985 No. of Projects	March 31, 1985 Value	March 31, 1984 No. of Projects	March 31, 1984 Value
Equity Investments	7	$1,595,000	6	$1,586,000
R&D Investments	5	205,000	1	1,000
	12	$1,800,000	7	$1,587,000

* One project has been repaid.

(d) Investments

(Cumulative to March 31, 1985)

(i) Approved Investments

	Value	Percentage
Equity	$1,861,000	78%
R & D	525,000	22%
Total	$2,386,000	100%

(ii Current Asset Value of Equity Investments

	Equity
Funds originally invested	$1,861,000
Reserve for decline	(150,000)
Repayments by clients	(116,000)
Current Value March 31, 1985	$1,595,000

VI. Awareness Activities

	1984/1985	1983/1984
Seminars	9	3
Attendees	210	120
Media Coverage	46	101
Client Consultations on Investment	1,200	900
On-site Investment Analysis	160	127
Trade Shows	5	5
Newsletter	4	5
Clients Receiving	10,800	8,000

VII. Case Studies

(a) BURGESS POWER TRAIN & MFG. INC.

SUDBURY, ONTARIO

OCRMT INVESTMENT: $365,000

Background:
- Manufactures and markets heavy duty equipment for off-highway vehicles such as axles and gears.

Opportunity:
- Investment used for further expansion of activities in the areas of product development, marketing, quality control and services.

Result:
- Approximately 40% of their business is with the U.S.A.
- Currently employs 48 men and women in Sudbury and 17 more to handle U.S. sales.
- Manufacturing agents have been established in the U.S.A.

B&D PORTABLE ALIGN BORING AND MACHINING

SUDBURY, ONTARIO

OCRMT INVESTMENT: $300,000

Background:
- Manufactures portable boring machines.

Opportunity:
- Investment by OCRMT for commercial marketing and further development of B&D portable align boring unit.
- Unit used for the repair and maintenance of mining, forestry and construction equipment.

Result:
- 80% of products exported to the U.S.A.
- Sales have increased substantially.